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(54) Depilatory compositions.

(57) Aqueous depilatory compositions containing biguanide and/or aminoguanidine and active thiol agent(s) which provide for faster hair removal are disclosed.

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DEPILATORY COMPOSITIONS

TECHNICAL FIELD

The invention described herein relates to a depilatory composition comprised of an accelerator comprising biguanide or aminoguanidine or mixtures thereof and an active thiol agent.

BACKGROUND OF THE INVENTION

The use of thiol-based depilatory agents, such as thioglycolic acid, for removal of unwanted body and facial hair is well established in the art. These agents react by reducing hair's protein disulfide bonds to sulfhydryl anions, thereby allowing easy removal of the weakened hairs when washed or wiped away. However, in using thiols, it was discovered that certain conditions facilitated the effectiveness of this reaction. One such condition is high alkalinity to provide ionized reactants. Not only do the high pH's (approximately 12.0 - 12.5) result in ionized thiols, but they also result in increased penetration of a reactant. Substances to provide further enhancement of penetration by active thiols were developed.

Further progress in the area of depilation resulted in the development of compounds which seem to expose more of the disulfide bonds to thiol agents. It is thought that these compounds decrease inter and intra chain bonding in hair keratin thereby, "accelerating" the rate of penetration and thus reaction by the thiols. Ureas, thioureas, and guanidines are thought to react as such accelerators, and in fact, the prior art discloses many of these nitrogen-based depilatory

accelerators. Among such prior art references are U.S. Patent 2,192,380, March 5, 1940 to David Walker Jayne, Jr.; U.S. Patent 3,194,736, July 13, 1965 to Ernest Brown & John E. Logan; Belgian Patent 765,987, May 5, 1970 to Investigations Scientifiques Pharmaceutiques; U.S. Patent 3,981,681, September 21, 1976 to Mario de la Guardia; U.S. Patent 3,271,258, September 6, 1966 to Charles Zviak and Jean Rouet; U.S. Patent 4,177,260, December 4, 1977 to Theodor Wajaroff; French Patent 2,168,202, January 20, 1972 to Fabres SA P.; U.S. Patent 3,686,296, August 22, 1972 to Harvey A. Yablonsky; and U.S. Patent 3,728,356, August 17, 1973 to Harvey A. Yablonsky.

In addition to the above-mentioned disclosures, biguanides have been chemically reacted with ethylene sulfide to form thiol depilatory derivatives, U.S. Patent 2,453,333, November 9, 1948 to Leonard P. Moore and Walter P. Ericks. In addition, U.S. Patent 2,174,497, September 26, 1939 to William H. Hill discloses a method of unhairing hides and skins by combining biguanide with an alkaline hydrolyzing agent. However, no thiol depilatory with biguanide as an accelerator is suggested by Hill.

Aminoguanidine has been combined with alkaline hydrolyzing agents, such as calcium hydroxide, for unhairing hides and skins, Moore, E.K. and Kopperhoefer, R., J. American Leather Chemists Association, 28: 245 - 259 (1933). However, no thiol depilatory combined with aminoguanidine is suggested by Moore and Kopperhoefer.

The present invention provides not only more effective and faster removal of unwanted body and facial hair than urea accelerators, but the combination of the accelerators herein with a thiol depilatory is safer for human usage in comparison to guanidine and thiourea accelerators.

It is an object of the present invention to provide safe and effective removal of unwanted body and facial hair. It is a further object to provide depilatory compositions containing an aminoguanidine or a biguanide or mixtures thereof and an active thiol depilatory agent. These and other objectives will become readily apparent from the detailed description which follows.

All percentages and ratios used herein are by weight unless otherwise specified.

SUMMARY OF THE INVENTION

This invention relates to depilatory compositions which use aminoguanidine and/or biguanide as an accelerator for active thiol depilatory agents.

DESCRIPTION OF THE INVENTION

The depilatory composition of the present invention not only is safer than guanidine and thiourea compounds, but it also reduces depilation time. This reduction in time for removal of unwanted hair is advantageous for several reasons. First of all, the average person using such compositions prefers reduced time of depilatory action.

Secondly, this reduction permits less exposure of skin to possible irritation due to high alkalinity or exposure to thiol actives.

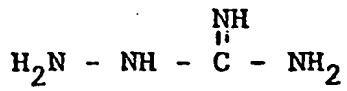
The increased rate of hair removal obtained by the present invention is believed to be due to the acceleration by aminoguanidine and/or biguanide, allowing the thiol active to more readily exert its depilatory effect.

Essential Components

The composition of the present invention is based upon three essential ingredients, the accelerators a thiol depilatory, and water.

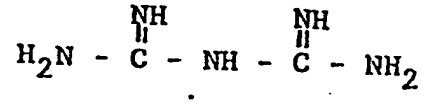
The essential accelerators herein are selected from the group consisting of aminoguanidine, biguanide, their salts and mixtures thereof.

Aminoguanidine, formula presented in the figure below, can be used in base or salt form at concentrations providing from about 0.01M to about 2.0M aminoguanidine, preferably from about 0.5M to about 1.0M aminoguanidine. Suitable salts of aminoguanidine include the hydrochloride form, sulfate form, bicarbonate form, and mixtures thereof.



Aminoguanidine

Biguanide, formula presented in the figure below, can be used in base or salt form at concentrations providing from about 0.01M to about 2.0M biguanide, preferably from about 0.5M to about 1.0M biguanide. Suitable salts of biguanide include the hydrochloride form, sulfate form, bicarbonate form, and mixtures thereof.



Biguanide

The thiol active may include one or more thiol acids, (e.g. thioglycolic, thiolactic acid, and β-mercaptopropionic acid), or the alkali and/or the alkaline-earth metal salts of these acids. In addition, other active thiol agents can be used. These include α-mercaptoethanol, thioglycerols, 1,3-dithio-2-propanol, 1,4-dithio-2-butanol, 1,4-dimercapto-2,3-butanediol, 1,3-dithio-2-methoxypropane, 1,3-dimercapto-2-aminopropane, 1,4-dimercapto-2,3-diaminobutane, aminoethanethiol, and related effective thiol actives. The thiol active is present at a concentration of from about 0.1M to about 2.0M, preferably from about 0.2M to about 1.0M thiol.

Mixtures of thiol actives also may be used in the compositions described herein

Water from about 10% to about 80%, preferably from about 20% to about 70%, makes up the third essential component of the present invention.

The pH of the present depilatory composition should range from about 10.5 to about 12.5, preferably from about 11.0 to about 12.3 at 25°C. These pH's preferably are achieved through the use of an alkaline material such as calcium hydroxide.

Optional Components

The present invention can be embodied in several commercial forms such as creams, lotions, gels, aerosols, or the like. If the present invention is put into such forms, a number of optional ingredients would be added. These ingredients include from about 0% to about 5% of a suitable filler such as chalk, magnesium oxide and carbonate, clays, talc, fumed silica and mixtures thereof. Emulsifiers such as anionic surfactants (e.g., fatty alcohol sulfates and/or alkyl aryl sulfates), nonionic surfactants, and mixtures thereof, present at levels of from about 0% to about 20%, are also useful. Often chelating agents to complex with metals are included in such compositions. One suitable example of such a chelator is ethylenediaminetetraacetic acid, its salts and mixtures thereof.

Among the other ingredients useful in these various embodiments is a gelling agent or thickener, present at levels of from about 0% to about 30%.

The thickeners used could include both natural and synthetic ones such as tragacanth, xanthan, karaya, and guar gums, clays, methyl or hydroxyethyl cellulose, hydroxypropyl cellulose, carboxymethyl cellulose, fatty and polyvinyl alcohols, modified starches and sugars, and mixtures thereof. Emollients such as paraffin, petrolatum, mineral oil, fatty alcohols, silicone oils, and mixtures thereof present at levels of from about 0% to about 60%, can also be included. Fragrance and coloring generally provide the remaining ingredients.

When the present invention is in the form of an emulsion, it can be either in an oil-in-water or water-in-oil form.

The following are examples of compositions of the invention described herein. They are merely illustrative of the present invention and are not limitative thereof:

EXAMPLE I

Depilatory Cream

Aminoguanidine sulfate	12.3000
2-aminoethanethiol HCl	5.0000
Thioglycolic acid	2.4800
Calcium hydroxide	10.7900
Cabosil HS-5*	0.5000
Stearyl alcohol	7.5000
Isocetyl alcohol	5.5000
Brij 56**	4.3000
Fragrance	2.0000
Coloring	0.0125
Water	49.6175

*Fumed silica.

** Polyoxyethylene (10) cetyl ether (ICI Americas, Inc.)

EXAMPLE II

Depilatory Cream

Biguanide	10.1000
2-aminoethanethiol HCl	5.0000
Thioglycolic acid	2.4800
Calcium hydroxide	10.7900
Cabosil HS-5*	0.5000
Stearyl alcohol	7.5000
Isocetyl alcohol	5.5000
Brij-56**	4.3000
Fragrance	2.0000
Coloring	0.0125
Water	51.8175

*Fumed silica.

** Polyoxyethylene (10) cetyl ether (ICI Americas, Inc.)

EXAMPLE III

Depilatory Gel

Ceteareth 50*	24.50
Thiolglycerol	6.00
Aminoguanidine	12.30
Calcium hydroxide	10.80
Fragrance	2.00
Water	44.40

*Polyethylene glycol ether of cetearyl alcohol.

EXAMPLE IV

Depilatory Gel

Ceteareth 50*	24.50
Thiolglycerol	6.00
Biguanide	10.10
Calcium hydroxide	10.80
Fragrance	2.00
Water	46.60

*Polyethylene glycol ether of cetearyl alcohol.

Another embodiment of the present invention is as an aerosol. In such a form, the depilatory would include previously-listed optional ingredients as well as propellants. The following examples describe aerosol formulations. Again, they are meant merely as an illustration of the present invention and not limitative of that invention:

EXAMPLE V

Depilatory Aerosol

A. Concentrate

Calcium thioglycolate	7.48
Aminoguanidine	12.52
Calcium hydroxide	10.80
Polyoxyethylene(20)stearylether	4.30
Stearyl alcohol	7.50
Mineral oil	3.00
Vaseline	0.30
Fragrance	0.30
Water	53.80

EXAMPLE V (continued)

B. Fill

	Grams
Concentrate	176.00
Propellant 12	7.12
Propellant 114	5.38

EXAMPLE VI

Depilatory Aerosol

A. Concentrate

Calcium thioglycolate	7.48
Biguanide	10.00
Calcium hydroxide	10.80
Polyoxyethylene(20)stearylether	4.30
Stearyl alcohol	7.50
Mineral oil	3.00
Vaseline	0.30
Fragrance	0.30
Water	56.32

B. Fill

	Grams
Concentrate	176.00
Propellant 12	7.12
Propellant 114	5.38

Claims

1. An aqueous depilatory composition characterized by

(a) from 0.1M to 2.0M of an active thiol agent; and

(b) from 0.01M to 2.0M of an accelerator selected from aminoguanidine and its salts, biguanide and its salts and mixtures thereof;

wherein said composition has a pH of from 10.5 to 12.5 at 25°C.

2. A depilatory composition according to Claim 1 characterised in that the active thiol agent is present at a level of from 0.2 to 1.0M.

3. A depilatory composition according to Claim 1 or 2 characterised in that the accelerator is present at a level of from 0.5M to 1.0M.

4. A depilatory composition according to any of Claims 1 to 3 characterised in that the composition has a pH of from 11.0 to 12.3.

5. A depilatory composition according to any of Claims 1 to 4 characterised in that the active thiol agent is selected from thioglycolic acid, thiolactic acid, and β-mercaptopropionic acid, the alkali and alkaline-earth metal salts of these thiol acids, α-mercaptoethanol, thioglycerols, 1,3-dithio-2-propanol, 1,4-dithio-2-butanol, 1,4-dimercapto-2,3-butanediol, 1,3-dithio-2-methoxypropane, 1,3-dimercapto-2-aminopropane, 1,4-dimercapto-2,3-diaminobutane, and mixtures thereof.

6. A depilatory composition according to any of Claims 1 to 5 characterised in that the composition is a cream, lotion, or gel, and in addition contains from 0% to 5% of a filler, from 0% to 20% of an emulsifier, from 0% to 30% of a gelling agent or thickener, from 0% to 60% of an emollient, from 0% to 5% of a chelating agent, and from 0% to 5% fragrance and colorant.

7. A depilatory composition according to Claim 6 characterised in that the filler is selected from chalk, magnesium oxide and carbonate, clays, talc, fumed silica, and mixtures thereof, the emulsifier is selected from anionic surfactants, nonionic surfactants, and mixtures thereof, the thickener is selected from tragacanth, xanthan, karaya, and guar gums, clays, methyl or hydroxyethyl cellulose, hydroxypropyl cellulose, carboxymethyl cellulose, fatty and polyvinyl alcohols, modified sugars and starches, and mixtures thereof, the emollient is selected from paraffin, petrolatum, mineral oil, fatty alcohols, silicone oils, and mixtures thereof, and the chelating agent is selected from ethylenediaminetetraacetic acids, the salts of said acids, and mixtures thereof.

8. A depilatory composition according any of Claims 1 to 7 characterised in that composition is an aerosol, and in addition contains from about 0% to about 20% propellant.

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EUROPEAN SEARCH REPORT

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. Application number

EP 83 30 3085

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
Y	US-A-2 437 965 (MICHAELS et al.) * Claims; column 3, lines 56-74, in particular line 71 *	1-8	A 61 K 7/155
D,Y	US-A-3 194 736 (BRAUN et al.) * Claims; column 3, lines 52-65 *	1-8	
Y	DE-A-2 131 630 (AVON PRODUCTS) * Claims *	1-8	
A	FR-A-1 578 008 (MORELLE et al.) * Claims *	1	
A	CHEMICAL ABSTRACTS, vol. 51, 1957, column 15161b, Columbus, Ohio, USA; H. TOYOKA et al.: "The effect of various organic nitrogen compounds on unhairing with lime solution" & NIPPON HIKAKU GIJUTSU KYOKAISHI 3, 79-87, 1957 * Abstract *	1	

TECHNICAL FIELDS SEARCHED (Int. Cl.4)

A 61 K

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	23-10-1984	WILLEKENS G.E.J.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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